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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,450

10/27/2004

Yatsuhari Yokota

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EXAMINER

ABOAGYE, MICHAEL

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/511,450	Applicant(s) YOKOTA, YATSUHARI	
	Examiner MICHAEL ABOAGYE	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirofumi et al. (JP 07-015120) in view of Craig (US Patent No. 4770293).

Hirofumi et al. discloses a reflow soldering apparatus comprising a conveyor ("4", figure 1, translation) to transport circuit boards mounted with electronic components ("3", figure 1, translation) into multiple chambers (1, 2, 3, figure 1, of translation) and blowing means (6, 8, 11, figure 1, translation) installed in said chambers, wherein the centers of the impellers in said adjacent blowing means are not on a single horizontal plane and arrayed offset up and down (6, 8, 11, figure 1, translation); blowing means are not on a single perpendicular plane along a transport line of said conveyor and arrayed offset to the left and right (6, 8, 11, figure 1, of translation); wherein said blowing means are arrayed left and right in a zigzag pattern along the transport line of said conveyor. Note the blowing means ("6, 8, 11", of translation) shown in figure 1 have different heights, therefore their centers are on different horizontal plane relative to the conveyor surface, thus indicating an up and down offset. Secondly the blowers are positioned on different perpendicular line relative to the horizontal plane defined by plane of travel of the conveyor; hence such arrangement defines a zigzag array by viewing from the plane of the conveyor upwards.

Hirofumi et al. teaches the principal structural features set forth in the applicant's claimed invention i.e. conveyor, plurality of chambers, impellers and a reflow soldering apparatus. However Hirofumi et al. fail to teach the adjacent fans being **overlapped as** seen vertically from a direction perpendicular to the transport line of the conveyor. The examiner interprets said overlapping configuration of the fan to be essentially mode of packaging of said plurality of fans in the plurality of chambers.

Craig teaches a configuration of trays for packaging articles, each tray having a cavity; wherein the adjacent cavities are arranged in an inclined mode and with adjacent cavities overlapping each other, said design meant to facilitate full utilization of space or accommodating substantially a predetermined full size article in a receiving space of reduced size (Craig, abstract, column 1, lines 44-55 and figures 4 and 5 and 7-11). The examiner recognizes that Craig teaching is not drawn to reflow oven, however, it should be noted that central theme of the applicant's claimed invention is drawn to packaging or arrangement of impellers within reflow oven chambers to conserve space or to construct a compact device, hence the examiner believes the reference to Craig is relevant and a reasonable prior art.

It would have been obvious to one of ordinary skill in that art at the time the applicant's invention was made to modify the construction of Hirofumi to orient the impeller in a slanted or inclined mode as taught by Craig in order to facilitate full utilization of space or accommodating substantially a predetermined full size impeller in a receiving space of reduced size, which will ultimately yield a compact reflow oven (Craig, abstract, column 1, lines 44-55).

3. Claim 1, 2, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno et al. (US Patent No. 5,154,338) in view of Craig (US Patent No. 4770293).

Okuno et al. discloses reflow soldering apparatus comprising a conveyor ("2", figure 1) to transport circuit boards mounted with electronic components into multiple chambers (zones, P, R and C, figure 1, and column 4, lines 15-20), and blowing means installed in said chambers, wherein the centers of the impellers in said adjacent blowing means are not on a single perpendicular plane along a transport line of said conveyor and arrayed offset to the left and right; wherein said blowing means ("17", figure 1, abstract, column 5, lines 15-29). Okuno et al. teaches blowing means arranged above and below along the transport line of said conveyor (figure 1). Note the left and right offset arrangement of the blower "17" in figure 1 depicts a zigzag pattern along the transport line of said conveyor.

Okuno et al. teaches the principal structural features set forth in the applicant's claimed invention i.e. conveyor, plurality of chambers, impellers and a reflow soldering apparatus. However Okuno et al. fails to teach the adjacent fans being **overlapped as** seen vertically from a direction perpendicular to the transport line of the conveyor. The examiner interprets said overlapping configuration of the fan to be essentially mode of packaging of said plurality of fans in the plurality of chambers.

Craig teaches a configuration of trays for packaging articles, each tray having a cavity, wherein the adjacent cavities are arranged in an inclined mode and with adjacent cavities overlapping each other, said design meant to facilitate full utilization of space or accommodating substantially a predetermined full size article in a receiving space of reduced size (Craig, abstract, column 1, lines 44-55 and figures 4 and 5 and 7-11). The

examiner recognizes that Craig teaching is not drawn to reflow oven, however, it should be noted that central theme of the applicant's claimed invention is drawn to packaging or arrangement of impellers within reflow oven chambers to conserve space or to construct a compact device, hence the examiner believes the reference to Craig is relevant and a reasonable prior art.

It would have been obvious to one of ordinary skill in that art at the time the applicant's invention was made to modify the construction of Okuno et al. to orient the impeller in a slanted or inclined mode as taught by Craig in order to facilitate full utilization of space or accommodating substantially a predetermined full size impeller in a receiving space of reduced size, which will ultimately yield a compact reflow oven (Craig, abstract, column 1, lines 44-55).

4. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirofumi et al. (JP 07-015120) in view of Craig (US Patent No. 4770293) as applied to claims 3 and 10 and further in view of Okuno et al. (US Patent No. 5,154,338).

Hirofumi et al. and Craig combined do not specifically show blowing means or fan arranged above and below along the transport line of said conveyor.

Okuno et al. teaches blowing means arranged above and below along the transport line of said conveyor (See, Okuno et al., figure 1).

It would have been obvious to one of ordinary skill in that art at the time the applicant's invention was made to modify the combined invention of Hirofumi et al. and Craig to arrange blowing means or fan above and below along the transport line of said conveyor as taught by Okuno et al. which would necessarily improve heat convection

within the reflow chambers and therefore efficient heating (Okuno et al. column 3, lines 10-19).

Response to Arguments

5. The examiner acknowledges the applicants' amendment received by USPTO on February 23, 2007. Claims 1-4 and 8-11 are currently under consideration in the application.

6. Applicant's arguments with respect to claims 1-4 and 8-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Kevin P. Kerns/

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